

JPRS-TND-86-017

11 AUGUST 1986

**Worldwide Report**

**NUCLEAR DEVELOPMENT  
AND  
PROLIFERATION**



**FOREIGN BROADCAST INFORMATION SERVICE**

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WORLDWIDE REPORT  
NUCLEAR DEVELOPMENT AND PROLIFERATION

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## HONG KONG

### PRESS REPORTS CONTINUING CONCERN OVER DAYA BAY NUCLEAR PLANT

Hong Kong PRC Representative

Hong Kong SOUTH CHINA SUNDAY MORNING POST in English 22 Jun 86 p 10

[Text]

CHINA's top representative in Hongkong, Mr Xu Jiatun, has told Beijing of the objections being raised here to the Daya Bay nuclear power plant.

Mr Xu, the local head of the New China News Agency, said yesterday he had passed on the objections to Government departments in Beijing which have an interest in the matter.

"I personally think local objections are understandable and I believe the State Council will understand them," Mr Xu said.

But he refused to give his own views on the subject.

Meanwhile, a top Chinese nuclear official has reiterated that Beijing will proceed with its nuclear plant construction programme and will endeavour to ensure it is accident-free.

The Minister for Nuclear Industry, Mr Jiang Xinxiong, was addressing the current session of

the Standing Committee of the National People's Congress.

According to China News Service, he said China's nuclear plants would use pressurised water reactors.

Mr Jiang's remarks came amid increasing concern in Hongkong over safety aspects of the Daya Bay plant following the Chernobyl disaster in Russia.

Waves of protest in Hongkong have not gone unnoticed in Beijing, which has mounted a strong defensive campaign.

Official publications have carried interviews with Chinese nuclear experts who say pressurised water reactors of the type China will use are much more technically advanced than the Russian type.

The Chinese Communist Party General Secretary, Mr Hu Yaobang, now on a visit to Europe, has also defended China's nuclear plants.

People should not be worried because there will be sufficient safety guarantees, he said.

Mr Jiang told the NPC committee China will proceed with the building of nuclear plants.

China should continue actively to develop coal and water-generated electricity while developing nuclear power in a selective way, he said.

Nuclear power could help solve the energy shortage in China's coastal areas where heavy industries are well developed, but transport facilities were insufficient, he said.

Another purpose in building nuclear plants was to update China's technology in this field, Mr Jiang said.

"For the moment, the dual purpose of building nuclear plants is to master the technology and to generate electricity," he said.

### Scientists in Beijing

Hong Kong SOUTH CHINA MORNING POST in English 24 Jun 86 p 25

[Text]

A GROUP of Hongkong scientists is visiting a nuclear reactor in Beijing, China News Service reported yesterday.

The 25-member group, led by physicist Professor Chan Yiu-wah, is attending the third national conference of

the Chinese Association for Science and Technology and a look at the reactor is on the agenda.

The Hongkong visitors are expected to raise questions about the safety of China's nuclear plants, in the light of the growing conflict

between China and Hongkong over the safety aspects of the Daya Bay nuclear power plant — and Chinese officials may take the chance to offer their views on the Daya Bay controversy.

Nobel prize-winning physicist Professor Yang

Chen-ning confirmed his support for the Daya Bay project on Sunday, in the face of growing local objections to the plant.

Legislative Councillor Mr Szeto Wah has pledged to press a debate on the issue in Legco and will also take up the case with the Basic Law Drafting Committee, of which he is a member.

Meanwhile, China's official organs continue to defend

#### Daya Bay.

China News Service yesterday carried a lengthy article from the *Workers' Daily* newspaper saying the Daya Bay plant will not only help solve the shortage of electricity in Guangdong, but will also help maintain Hongkong's stability and prosperity.

About 70 per cent of Daya Bay's output will go to Hongkong.

The newspaper said the

initial site work for the plant was completed last month and construction of the plant proper is expected to start in September.

*Workers' Daily* quoted a nuclear expert at the plant as saying the reactor will be accident-proof and that the site is the best possible choice.

The site was selected after a three-year search and can survive serious earthquakes, it said.

### Lack of Fallout Protection

Hong Kong SOUTH CHINA MORNING POST in English 28 Jun 86 p 1

[Article by Frank Choi]

[Text]

EXPERTS from the Daya Bay nuclear power project told a group of Hongkong legislators yesterday that the controversial plant's design will contain any nuclear fallout to within 10 km.

This falls well short of the 30-km radius evacuation area at Chernobyl following the nuclear disaster on April 26.

And a member of a pressure group campaigning against the \$27 billion plan has dismissed the assurance as unscientific.

Mr Fung Chi-wood, a spokesman for the Joint Committee of Concern for Nuclear Power, said once there was a core meltdown, it would be out of control.

"Our safety could only be assured if they can guarantee that there will be no meltdown, or the probability of a meltdown is extremely low," he said.

Pleas in Hongkong for more information on safety measures at Daya Bay have mounted since the Soviet disaster in which at least 30 people are believed to have died and hundreds more affected by radiation.

Experts from the Guangdong Power Joint Venture Co (JVC) told 21 Legco members during a two-hour meeting they had taken into account wind direction and speed, soil structure and the location of fault lines around the site to arrive at the 10 km estimate.

Miss Maria Tam, the con-

venor of the Unofficial Members of the Executive and Legislative Councils' public utilities panel, said the meeting focused on the safety of the core of the nuclear reactor in case of a meltdown, and information provided by the experts helped to ease some of the safety worries.

Members were told the safety measures would meet French international standards. France has built 34 domestic nuclear power plants and seven more for export. In all cases, leakage did not reach the reactor's second protective shell.

The experts said the double-shielded reactor, which is further protected by a concrete cell, is designed to prevent any leakage that could affect residents within a 10-kilometre radius from the core.

In case of a meltdown, a twin independent safety system will automatically reduce the pressure and temperature in the core and shut off the reactor. Each system will have a manual back-up.

Miss Tam said all the information on nuclear safety and four pages of questions submitted to the experts will

be released after Umelco staff have transcribed the minutes of the meeting.

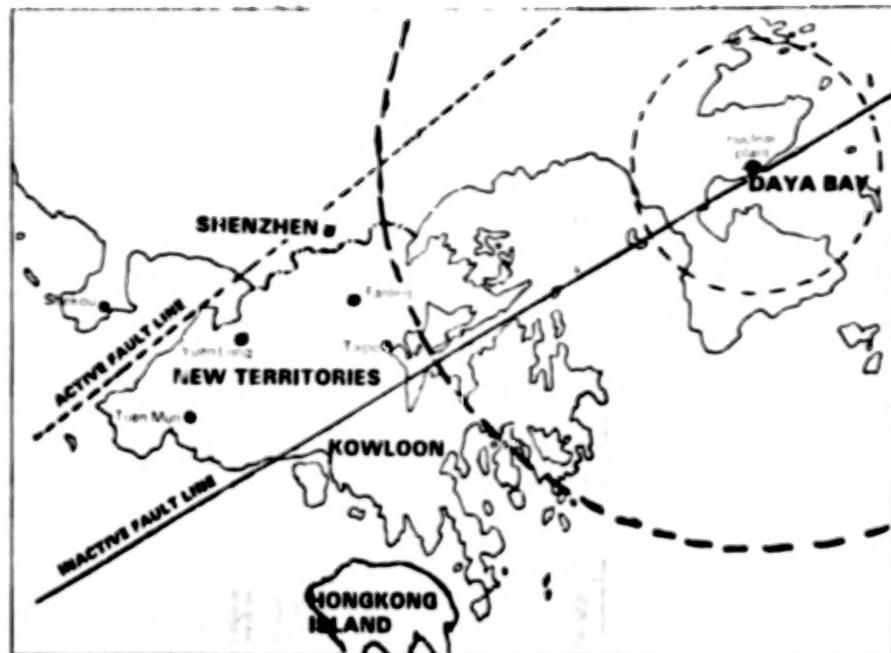
An extract of the meeting together with members' questions will be made public next Friday when a question and answer session will be held with the experts.

Miss Tam said members managed to ask only one-third of the drafted and supplementary questions at the meeting, but they will get another chance to get more information.

Twenty-one of the 46 Unofficial Legco members attended the meeting although only seven of them are members of the public utilities panel.

One Legco member, Professor Poon Chung-kwong, said the meeting helped to provide facts and figures to support the safety claims from JVC.

Prof Poon, also Dean of the University of Hongkong's Faculty of Science, said the plant seemed to be safe on paper but one should also consider the human factors which might affect safety.



MAP shows the 10-km containment radius of the Daya Bay nuclear project and the 30-km evacuation radius that applied at Chernobyl.

### Nuclear Safety Probe

Hong Kong SOUTH CHINA MORNING POST in English 29 Jun 86 p 1

[Article by Ann Quon]

[Text]

**THE GOVERNMENT** has again reacted swiftly to escalating public concern over the Daya Bay Nuclear Power Plant by suddenly extending the forthcoming trip of one of its top officials overseas to include several European countries.

The Secretary for Economic Services, Mr John Yaxley, originally only scheduled to visit England, has had to change his plans to include France and Belgium.

He is scheduled to leave the territory on July 8 and will now return on July 20.

The change in travel plans comes amid official concern over growing public opposition to the proposed Daya Bay plant, which is to be situated less than 70 km from Hongkong.

In what is seen as an attempt

to show that it is a caring and responsive government, Mr Yaxley will be deployed to learn as much as he can about the safety measures adopted by these countries.

His study also help the Hongkong Government prepare for what is threatening to turn into a full-scale public battle.

"I think it is helpful for the people of Hongkong to know that there is someone finding out details of places which are in a similar situation to us," Mr Yaxley said yesterday.

High on his list will be visits to plants similar in design to the one proposed for Daya Bay. This weekend he will shortlist European plants which have pressurised water reactors and are near heavily populated areas.

Daya Bay will have two 900 megawatt pressurised water reactors, considered the most advanced in nuclear technology.

Mr Yaxley has already earmarked the nuclear plant near Antwerp, Belgium as a focal point of his visit. It is within 10 km of Antwerp which has a population of almost a million. However, he has ruled out the possibility of visiting Chernobyl, the scene of the worst disaster in nuclear history.

One of his major concerns when meeting nuclear experts will be to grill them on all aspects of safety. The thinking is that while the Hongkong Government is not directly responsible for the safety measures planned for Daya Bay, it should equip itself with as much knowledge as possible in the face of growing questions from the public.

Mr Yaxley will also study the contingency plans developed by cities near these plants so Hongkong can prepare its own evacuation programme in the event of a nuclear disaster.

This will be independent of the study currently being done by the UK Atomic Energy Authority based in Harwell, England which Mr Yaxley plans to visit. The authority has been commissioned to assess the probability of different types of accidents at Daya Bay and their impact on Hongkong. The study will also provide guidelines for a contingency plan.

However, those guidelines are expected to fall short of any full-scale evacuation plan. As a result, Mr Yaxley will also visit those authorities expected to provide emergency support in the event of any nuclear incident, including fire services and police authorities.

Although the administration is confident that the Daya Bay plant will be safe, they nevertheless feel these early steps must be taken to ensure that Hongkong will be ready in the unlikely event of a mishap.

While in England, Mr Yaxley will also visit the nuclear powered station near Bristol, as well as meet officials from various nuclear agencies, including the Department of Energy, the Central Electricity Generating

Board, and the United Kingdom Nuclear Installation Corporation.

The visit is part of a new more aggressive role the Hongkong Government feels it must take at a time when there is a crisis of confidence about the safety and commercial viability of nuclear power.

France, the world leader in nuclear energy, offers its consumers the cheapest electricity in Europe.

It also exports the output of five nuclear power stations. Currently Britain is laying underground cables across the English Channel after striking a deal with France to buy French generated power.

But whether nuclear energy will mean cheaper costs for Hongkong consumers is difficult to determine, given fluctuating fuel prices. China Light and Power, which will buy 70 per cent of the Daya Bay output, has pledged that Hongkong consumers will not pay any more for electricity than at present.

Another strategy being pursued by the Government is to impress on the firms directly involved in the Daya Bay project the need for public accountabil-

ity. Vital to this is the need to convince the firm behind the joint venture project, the Guangdong Nuclear Power Joint Venture Company (JVC), to put pressure on its experts to make themselves available for public scrutiny.

The Government has already had some success in this approach with the appearance on Friday of three JVC experts before a public utilities panel. The panel consists of 21 non-civil servant members of the legislative and executive councils.

The administration's aim is to have more experts appear before the panel to answer questions of members, who in turn will be expected to report their findings to the public.

At this stage, the Government has no plans to engage in any dialogue with district boards, which have repeatedly asked for officials to brief them on the Daya Bay situation.

According to one source, it is felt that the Government cannot answer their questions on safety and contingency measures until a clearer picture emerges of what other countries are doing to equip themselves against the threat of nuclear disaster.

### 'Most Dangerous Type Reactor'

Hong Kong SOUTH CHINA MORNING POST in English 4 Jul 86 p 22

[Article by Louis Liu]

[Text]

THE pressurised water reactor to be used in the Daya Bay nuclear plant is the most dangerous type of all nuclear reactors, says a visiting consultant to the Hongkong Friends of the Earth.

It is not only foolish but irresponsible to go ahead with the project after the Chernobyl accident, Mr Walter Patterson said yesterday.

"The only acceptable probability for an accident at Daya Bay would be zero, and since zero is not possible there is always a finite probability of an accident. That probability is already too big a risk to take for the five million people of Hongkong," he told a press conference.

"If there is the potential

for a devastating catastrophe, even only a small probability, the risk is still not worth taking."

The Hongkong Friends of the Earth have written to the Legislative Council's public utilities panel asking for a meeting so Mr Patterson can put forward his views.

Mr Patterson, who has a postgraduate degree in nuclear physics, said if there were an accident at Daya Bay, it would be impossible to evacuate five million Hongkong people from the path of a radioactivity cloud in a matter of hours.

The long-term deposit of material from that cloud might make the whole of Hongkong uninhabitable for possibly decades.

"It would certainly kill

people eventually. It might not kill them immediately because radiation does not kill people immediately, as you have seen in the case in the Soviet accident - what is likely to happen is medium- to long-term effects on a large number of people," he said.

He said a combination of design features of the pressurised water reactor had made it - in his view - much the most dangerous design of reactors.

"They're very compact. They produce heat very rapidly. If that heat is not removed rapidly their temperature can rise very fast. The fuel can melt like what happened at Three Mile Island. There's a possibility of hydrogen explosion because of the water."

This type of reactor was originally designed as a power plant for submarines, the

reason why they were so compact, he said.

"There's a lot of heat coming out of a small volume. The heat output is 100 kilowatts per litre of core. That means that if anything goes wrong, it may go wrong very fast because the temperature can rise very rapidly."

In order to take the enormous heat away, extremely efficient cooling is required. A tank of water under high pressure - which will prevent it turning into steam - is needed.

"The fabrication of this pressure vessel must be of the highest possible standard ... a reactor of this kind could discharge almost all of its radioactivity into the surroundings. It is not to me in any way a satisfactory design of nuclear technology."

## Revelations From PRC Nuclear Specialist

Hong Kong SOUTH CHINA MORNING POST in English 5 Jul 86 p 1

### [Text]

**THE Daya Bay nuclear power plant will proceed as planned despite any opposition to it and regardless of whether Hongkong's China Light and Power Company buys its electricity.**

And it is unlikely that Hongkong would refuse to buy power from Daya Bay because of an important provision in the contract between China and the Hongkong power company.

A top Chinese nuclear specialist, Mr Jiang Shengjia, revealed that it had been agreed China would purchase the power generator for Daya Bay from Britain - provided that Hongkong bought electricity from the plant.

Otherwise, he said, China would buy all the necessary equipment from France.

Under the present package, the \$26 billion Daya Bay plant will be equipped with a pair of reactors supplied by the French and turbine generators supplied by the British GEC group.

Mr Jiang's statement was made in a TV interview in

Beijing.

He had earlier explained China's nuclear plans to a group of Hongkong physicists attending a national congress of the Chinese Association of Science and Technology.

He said it was also unlikely that China Light and Power, which has signed the contract with China, would withdraw from the project.

"If it withdraws, it will have to shoulder the legal consequences," he warned.

Mr Jiang said the State Council would soon announce its policy about safety measures at nuclear plants.

And China would send a team of nuclear experts to Hongkong to hold a large-scale exhibition to increase local people's awareness about nuclear technology.

He said China had worked out a comprehensive set of safety precautions and contingency plans - but Hongkong was not included as China believed it would not be affected, as it was 50 km away.

Earlier this week Foreign Ministry deputy spokesman Yu Zhizhong said China had not worked out an eva-

tion plan for Hongkong.

Mr Jiang, a graduate of Columbia University who helped pioneer China's nuclear industry, said Daya Bay was chosen after three years of investigations. It was the best site both because of its location and the geological structure of the site.

This is the first time China has made it clear that no matter what the objections are, the Daya Bay project will go ahead. Until recently, Chinese officials had given the impression they would take the views of Hongkong people into consideration.

Analysts point out it is too late for China to pull out at this stage, having committed itself well before the Chernobyl incident which has had a dramatic impact on public attitudes to nuclear power.

Beijing has signed letters of intent with British and French groups and site formation at Daya Bay is almost finished.

Mr Jiang stressed that the equipment for the nuclear plant was to be provided by France, which had established 42 nuclear plants. The design was the most advanced available, having as-

similated the experience of the Three Mile Island incident, and was totally different from that at Chernobyl.

He said the design called for three-tiered measures to ensure there would be no radiation leaks. The container structure would be so strong that even if a plane crashed into it, the safety cover would not be damaged.

A computerised simulator would be used to train staff in the detection of accidents.

He said the people planning nuclear developments in China and those responsible for safety would be in separate organisations. This was not the case in the Soviet Union.

Acknowledging that negotiations had been held on lowering the cost of the Daya Bay project, Mr Jiang said this would not affect the plant's safety standards.

He said nuclear power played an important role in developed countries. In France, 68 per cent of electricity was nuclear generated.

China could not afford to ignore nuclear power although priority had been given to developing thermal and hydro-electric plants.

## Expert From Power Company

Hong Kong HONGKONG STANDARD in English 5 Jul 86 p 1

### [Article by Katherine Saltzstein and Chalina Chung]

### [Text]

**THERE is no contingency plan for the proposed nuclear power plant to be built at Daya Bay, 50 kilometres from Hongkong, an expert involved in the project admitted yesterday.**

The Planning and Contracts Manager of the Guangdong Nuclear Power Joint Venture

Company, Mr P A Littlewood, said the possibility of evacuating people from Hongkong was not envisaged when the site for the plant was selected.

Mr Littlewood was speaking at an open session of the Umelco Public Utilities Panel with a company delegation, led by its operations chief, Sir Jack Cater.

Said Mr Littlewood: "I'm not aware of any contingency plan in Hongkong."

I just want to clarify when we say radiation can go beyond 10 kilometres, all the information that we have, all the analysis that's being done indicates that it is such a low level that it is highly unlikely to have any significant impact."

He was queried by a member of the panel, Senior Member of the Legislative Council, Miss Lydia Dunn, as to why there was no contingency plan when such plans are a pre-requisite for building nuclear plants in countries like the United States.

Replied Mr Littlewood: "Procedures in different countries are different and the procedure that we are using are heavily based on French procedure."

Most of the French plants are located close to population centres.

It is difficult to conceive if this could ever have been done unless the French authorities had been satisfied that the level of safety was adequate."

Shortly after the meeting, Legislative Councillors announced that they would embark on a fact-finding mission to countries with experience in nuclear energy.

The councillors felt the trip was necessary because it was not sufficient just to listen to arguments from opposing camps on such a controversial subject.

They are expected to negotiate with active nuclear energy programmes to learn about safety and plant operation.

Nations which have frozen their nuclear plans because of political, economic or safety reasons will also be on their itinerary which is to be finalised in a week.

The councillors are expected to tour France, Japan and the United States, where plants similar to the one proposed for Daya Bay are being operated.

At the meeting with the Umelco panel, experts from the company said the pressurised water reactor to be used by the Daya Bay plant is safe because of a containment vessel surrounding the plant.

Mr William Stoen, the head of the project's Hongkong partner (Hongkong Nuclear Investment Company), said there was "no chance of a release of radioactive material".

"There is no indication of the need for an evacuation plan."

But he said in case of any leakage, evacuation would only be needed for a 10-kilometre radius around the plant.

Questions from Umelco panelists were hard-hitting.

and some of the panel members seemed unconvinced after a technical presentation followed by answers to their questions.

Mused Councillor Peter Poon: "They said the *Titanic* was unsinkable."

The experts, however, disputed statements made this week by nuclear physicist Walter Patterson that the Daya Bay plant will be "unsafe and uneconomical".

Mr Littlewood said the Daya Bay plant is similar to the Three Mile Island plant in the United States which experienced a meltdown but he said radiation was contained in that incident and no evacuation was needed.

The power plant at Chernobyl in the Soviet Union is not as safe as the one in Daya Bay, he added.

In a meeting with the press after the Umelco discussion, Sir Jack said it would be up to China to develop a contingency plan.

The company officials said it was not clear whether China would go ahead with the project if Hongkong were to pull out.

China will decide whether to proceed with the plant on October 7 after an evaluation of contracts and a review of procedures, said the officials.

Umelco panelist Professor Poon Chung Kwong said he was not fully satisfied with the submissions.

## Challenge to Progress

Hong Kong SOUTH CHINA MORNING POST in English 30 Jun 86 p 20

[Editorial]

[Text]

THE gravest danger posed by the Daya Bay nuclear power plant has nothing to do with the chances of a Chernobyl-type calamity — horrifying though that prospect is. The biggest threat is to the delicate,

sensitive and often ambiguous relationship that is beginning to emerge between China and Hongkong.

The transfer of sovereignty which sees Hongkong passing

from British to Chinese rule has been tackled with a good deal more imagination and tact than many people thought possible. The "one country, two systems" concept is a neat theoretical device which has offered some degree of hope for those fearful that Hongkong's way of life - its dynamism and profitability - would disappear as soon as the Union Jack was lowered.

China has shown itself to be most accommodating - so far - to the people of Hongkong. It has gone to great lengths to make sure that Hongkong people are consulted over the inevitable changes that will take place; it seeks at every opportunity to allay fears that its looming bulk and power provoke. The leaders in Beijing realise how much they have to learn before 1997 and are relying on Hongkong people to teach them.

Politically, we have come a long way since those days of near-panic during the Sino-British talks about the territory's future. The Chinese leadership must take the bulk of the credit for giving real credibility to Deng Xiaoping's reassuring words in that troubled period.

Is China really prepared to sacrifice the huge progress that has been made since then because it is determined to build a nuclear power plant 50 kilometres away from a densely-populated city, a significant number of whose residents are convinced that it poses a grave danger to them?

## Surprises

Hongkong people are generally amenable to the whims and dictates of authority. They are busy people too, and rarely have the time, energy or inclination to voice opinions about issues which do not directly affect them. It has, on several occasions in the past,

taken the present rulers of Hongkong by surprise that their usually docile subjects could react so vehemently to policies they have taken a dislike to. China should not make a similar mistake.

The Daya Bay issue had begun to arouse local antipathy even before the Chernobyl disaster, but it has only been since then that any efforts have been made to inform people of the safety precautions to be taken there. There has never been any real explanation of the far more fundamental question: Why Daya Bay at all?

It would be facile to argue that the plant must be built there because 70 per cent of its output is destined for Hongkong and that to build it further away would increase transmission costs. The extra costs would be hardly noticeable in view of the size of the whole project.

The people of this territory appear to be overwhelmingly opposed to the siting of the plant so close to their homes. While a lot of the project's opponents may be over-stating their case, there can be no argument that to most people their fears are very real. Although they are not scientists, they can understand - as the whole world now understands - that nuclear power can kill. They want no part of it.

## Prestige

The economic gains that China foresees from this project could prove illusory. Scrapping the project or moving it somewhere far distant would cost money but would also win hearts and minds as very few other gestures would. Pressing ahead with it in the face of such obvious opposition would suggest to Hongkong people that their views are not, after all, very important. The loss of confidence this would precipitate is not worth

the risk."

Hongkong's contribution to China's modernisation program has been - and should continue to be - far more important than the loss of face in Beijing having to say: "Sorry, we were wrong."

A lot of national prestige is involved in this issue - and not just China's. The British and French are also heavily involved, with the governments of both nations playing a key role in ensuring that the deal went through. The French in particular have a point to prove to the world - that their nuclear reactors are safe, cheap and reliable. The Hongkong Government has also been playing its part, and its belated efforts to distance itself from the project indicate the extent of its embarrassment.

Hongkong people have their pride as well. They are not reassured by the endless guarantees of scrupulous attention to safety that are now being offered. It is the people of Hongkong who, ultimately, will have to translate the "one country, two systems" theory into fact. Their trust - essential to the success of the Special Administrative Region - is not going to be won by the construction of a nuclear power station on their doorstep against their wishes.

Communities all over the world will resist projects of this sort even in developed nations which have a history of nuclear power. China sees in Daya Bay an opportunity for its modernisation program to take a great leap forward. So far, it does not seem to see that this could be at the expense, in both political and economic terms, of progress in its links with what should be, after 1997, one of the country's brightest assets - the territory of Hongkong.

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

FUJIAN NUCLEAR PLANS--Fujian plans to conduct a feasibility study on the construction of a nuclear power plant in spite of the controversy surrounding the Daya Bay project. The deputy director of Fujian's planning commission, Mr Xin Shimin, said that although the province has rich hydropower and coal resources, it is considered worthwhile to conduct the study. The province, like many parts of China, is suffering from a chronic shortage of power supply. Mr Xin said the study will find out the amount of investment needed and the best location for the nuclear plan. He agreed nuclear power is a controversial subject and that energy experts in the province have different views about using it. [Text] [Hong Kong SOUTH CHINA MORNING POST in English 26 Jun 86 Supplement 1] /13046

CSO: 5150/0140

YUGOSLAVIA

BACKGROUND OF DECISION TO BUILD NUCLEAR POWER PLANTS

Belgrade ELEKTROPRIVREDA in Serbo-Croatian No 3-4, 1986 pp 125-130

[Article by Slavko Vrhovac, engineer, Community of the Yugoslav Electric Power Industry, Belgrade: "The Technical and Scientific Facts Which Persuaded the Yugoslav Electric Power Industry To Undertake Gradual Preparations for Construction of Nuclear Power Plants"]

[Text] I

The technical and scientific analyses concerning the need for development and construction of nuclear power plants in our country indicated back in the sixties the realism and the energy need for gradually beginning preparations and then for building these power generating installations. Four scientific meetings were held in our country, taking advantage of scientific advances and practical applications in the world: in 1966 in Novi Sad, in 1970 in Zagreb, in 1976 in Dubrovnik, and in 1980 in Portoroz.

Scientific seminars were held on two occasions in the Serbian Academy of Sciences and Arts.

So as to create realistic conditions for evaluation and in order to gain practical experiences, the Krsko Nuclear Power Plant, the first, went under construction in 1974 and went on line in 1972 [sic]. Parallel construction began on the Zirovski Vrh Uranium Mine, which went into pilot production in 1984. Knowledge and experience gained in Yugoslavia in nuclear science institutes beginning in 1948 were used in this undertaking.

Over the last 10 years work in Yugoslavia has continued on preparing and performing several technical and scientific analyses of the development of the electric power system and of meeting the country's energy needs over the next 20 to 25 years. They have all shown that assuming optimum utilization of the hydropower potential and economically exploitable coal reserves in our country it is not possible to meet future energy needs without at the same time gradually introducing and using nuclear power plants, assuming, of course, an intensive effort toward maximum electric power conservation.

The Federal Executive Council in its 192d meeting on 23 September 1976 and JUGEL in a meeting on 23 December 1976 approved the program assignment and

decided to finance preparation of the study "Analysis of the Criteria and Parameters for Selection of the Technology of Nuclear Power Plants in Yugoslavia." The professional council for evaluation and verification of this study, made up of 175 scientific and technical experts, among them 10 regular and corresponding members of academies of sciences in Yugoslavia, in a meeting on 15 February 1978 in JUGEL, and on 6 April 1978 in the Serbian Academy of Sciences and Arts in Belgrade, evaluated and approved this study and the electric power aspects of development and construction of nuclear power plants up to the year 2000, with a look forward to the year 2010, contained in it. The professional council then concluded:

1. The study could serve as one of the bases for defining the criteria and parameters for selection of the technology of nuclear power plants in Yugoslavia;
2. The professional council accepted the assessment of development of electric power consumption worked up in the study as the most probable development from 1988 to the year 2000, as follows:

<u>Year</u>	<u>Billions of kwh</u>	<u>kwh Per Capita</u>
1988	108	4,550
1990	124	5,155
1995	170	6,855
2000	230	8,789
2010	387	13,590

3. In the light of this assessment of electric power consumption on the one hand and the available unutilized hydropower and available coal reserves known today, the professional council estimated that in addition to the hydropotential and coal it would be necessary to use nuclear power to meet electric power needs over the period of time up to the year 2000 and beyond to the year 2010.

In that study it was judged to be realistic to build the following by the year 2000:

<u>Indicator</u>	<u>Billions of kwh</u>
Upper limit of construction of hydroplants, capacity (assuming land use planning is done in good time)	50
Thermal plant construction, capacity (assuming also the availability of 135 million tons of coal a year)	114
Construction of nuclear power plants, capacity	68

In making these estimates the professional council took as its point of departure the results of the study done by the Mining Institute in Belgrade and the assessment of the professional council for that study, which indicated the following:

<u>Indicator</u>	<u>Billions of Tons</u>
Exploitable coal reserves	13.5
Balance reserves	17.7
Geological reserves	20.5

known as of 31 December 1975 and the maximum possible annual production of 218 million tons of coal.

In the Strategy for Long-Range Development of the Fuel and Power Industry of Yugoslavia, Vol 3, 1983, pp 170, 171, 173, and 174, the following was adopted:

#### Required Generation of Electric Power

Year	1985	1990	1996	2000	2010
Billions of kwh	73-75	93-98	117-134	146-176	223-283

The strategy adopted the following figures for the year 2000:

- i. electric power production in hydroplants would have to be 55 billion kwh;
- ii. thermal power plants would have to be built and put on line with a capacity between 10,000 and 13,500 MW;
- iii. it would be necessary to commence construction of power generating units in nuclear plants with a capacity of 900 MW:

By 1985      1-2 plants      By 1990      3-4 plants      By 1996      5-9 plants

depending on the country's economic development.

The coordinating commission of all the electric power industries of the republics and autonomous provinces, within the JUGEL framework, for activities in preparing the development, construction, and operation of nuclear power plants up to the year 2000 adopted on 26 May 1983 a program assignment for preparation of the study entitled "Definition of a Series of Nuclear Power Plants" to be built in the Yugoslav Electric Power System by the year 2000 and to serve as the principal basis for drafting an invitation for bids on a series of nuclear power plants and the nuclear fuel cycle.

This study was prepared by the Institute for the Electric Power Industry in Zagreb, Energoprojekt of Belgrade, the Institute for the Electric Power Industry in Sarajevo, the School of Electrical Engineering at Skoplje University, and Energoingenjering of Novi Sad. A professional council of JUGEL made up of 75 scientific and professional experts from all over Yugoslavia appraised and verified that study on 20 February 1985. The data that served as the input in the study were based on estimates and were obtained from all the electric power industries of the republics and provinces of Yugoslavia.

The JUGEL professional council judged that the study could be used as one of the bases for drafting the invitation for bids on the series of nuclear power

plants and the nuclear fuel cycle and it recommended to the JUGEL Executive Board that it accept the study.

It was the judgment of the professional council that the estimated consumption of electric power, which was close to the estimates of the lowest growth of consumption contained in the Strategy of Long-Range Development, could serve as the basis for scaling the size of the series of nuclear power plants and for scheduling its gradual realization.

This study indicated future possible lines of development of Yugoslavia's electric power system over the period up to and after the year 2000, and it pointed to the necessary volume and pace of construction of new generating facilities proposed by the respective republic and provincial electric power organizations. The analyses contained in that study showed that assuming optimum construction of the remaining hydroplants and coal-fired thermal plants, using the minimum share of nuclear power plants in generating electric power, the lowest estimated structure of that output would be as follows up to the year 2010:

<u>Indicator</u>	(in billions of kwh)			
	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
Hydroplants	41.18	47.02	52.70	55.79
Thermal plants				
Coal-fired	73.63	95.09	115.31	146.20
Fired with liquid fuel	1.43	--	--	--
Nuclear power plants	--	0.95	0.90	0.96
	<u>7.30</u>	<u>14.92</u>	<u>31.78</u>	<u>48.63</u>
	123.54	157.98	200.69	251.58

All three of these professional and scientific analyses made in connection with examining the development of the Yugoslav electric power system over the period up to the year 2000 and beyond and also the study of the Federal Executive Council and JUGEL in 1978 and the Strategy for Long-Range Development of Yugoslavia's Fuel and Power Industry dating from 1983 and the study of JUGEL and the electric power industries of the republics and provinces dating from 1985 had in common that they showed the necessity for gradual development and inclusion of nuclear power plants in Yugoslavia's electric power system up to the year 2000 and beyond.

## II

The Long-Range Social Plan of Yugoslavia Over the Period From 1986 to the Year 2000, which was adopted by the SFRY Assembly in a session of the Chamber of Republics and Provinces on 18 July 1985, states as follows on p 1159 of SLUZBENI LIST SFRJ [OFFICIAL GAZETTE OF THE SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA], No 39, 26 July 1985: "Explorations for nuclear raw materials will be intensified, two nuclear power plants will be built, and construction will begin on another two power plants of 1,000 MW each."

### III

On the basis of the variant for construction of the smallest number of nuclear power plants in the Yugoslav electric power system up to the year 2010 (assuming complete construction of the entire hydropotential and the pace of and need for construction of coal-fired thermal plants as set forth in the Strategy for Yugoslavia's Long-Range Economic Development as set forth in the analysis) [sentence garbled] the definition of the series of nuclear power plants which was accepted by the professional council and Executive Board of JUGEL arrived at the strategy of gradually bringing the following on line:

I	Prevlaka NE	1995	V	Prevlaka NE	2005
II		1998	VI		2007
III		2001	VII		2008
IV		2003			

The Electric Power Industry of Bosnia-Hercegovina, the Community of Electric Power Organizations of Croatia, the Electric Power Industry of Macedonia, the Slovenian Electric Power Industry, the Consolidated Electric Power Industry in Belgrade, and Elektrovojvodina adopted the series of nuclear power plants.

Assuming that preparation for construction takes 5 years and construction of each nuclear power plant 7 years, then the schedule for construction of the series covered four nuclear power plants, each with an installed capacity on the order of 1,000 MW, two of which could be built and brought on line by the year 2000, while the other two would go under construction and would be brought on line in 2001 and 2003. Thus 4,000 MW was adopted as a realistic basis for the series of nuclear power plants.

On the basis of the provisions contained in a self-management accord among the electric power industries of all the republics and autonomous provinces adopted within JUGEL, on coordination of activities in preparing the development, construction, and operation of nuclear power plants in the Yugoslav electric power system up to the year 2000 which those electric power industries signed in May 1983, especially Article 4, Subparagraph 1, six signatories of the self-management accord (out of the eight): the Electric Power Industry of Bosnia-Hercegovina, the Community of Croatian Electric Power Organizations, the Macedonian Electric Power Industry, the Slovenian Electric Power Industry, the Consolidated Electric Power Industry of Belgrade, and Elektrovojvodina concluded an accord on 5 July 1985 in which they set forth their mutual rights, obligations, and responsibilities in connection with conducting an international advertisement to invite bids on choice of a single nuclear fuel cycle and a type of nuclear power plant whose construction would begin before the year 2000.

The participants in this accord agreed that the international advertisement to invite bids would be handled in conformity with the principles of the Social Compact on Uniform Procedure for Selection of the Single Nuclear Fuel Cycle and Type of Nuclear Power Plant, whose signatories were the Federal Executive Council, the executive councils of all the republics and autonomous provinces, all the electric power industries of the republics and autonomous provinces,

JUGEL, the Business Community of Machinebuilding and Power Machinebuilding--JUMEL, the Business Community for Nuclear and Other Scientific Institutes--NUKLIN, the 4E Business Community of Designers, and the self-managing communities of interest of the electric power industries of the republics and autonomous provinces.

The electric power industries of the republics and autonomous provinces referred to as participants in that accord agree that the following specifications would be published in the documentation for invitation of bids on the series of nuclear power plants and the nuclear fuel cycle:

1. The participants in this accord intend by the year 2000 to begin construction of four nuclear power generating units with a capacity on the order of 1,000 MW.
2. It is anticipated that the generating units of the nuclear power plants referred to in Paragraph 1 of this article would be brought on line approximately in the years 1995, 1998, 2001, and 2003.
3. The estimated share of the various participants in this accord in the power of the generating units of the nuclear power plants would be as follows:

Electric Power Industry of Bosnia-Hercegovina	Up to 10%
Croatian Electric Power Industry	37%
Macedonian Electric Power Industry	10%
Slovenian Electric Power Industry	12%
Consolidated Electric Power of Belgrade	10%
Elektrovojvodina	21%

4. Separate data are to be presented in drafting the invitations for bids on each generating unit of the nuclear power plants.

The participants in that accord jointly published the international public advertisement.

In a session on 8 October 1985 the commission of the Federal Executive Council for nuclear energy concluded that the documentation--invitation for bids on the nuclear fuel cycle, series of nuclear power plants, and the Prevlaka NE had been prepared in accordance with the bases, principles, and commitments of the policy for development of nuclear power up to the year 2000 and had been cleared with the participants (JUGEL, JUMEL, and NUKLIN) in accordance with social compacts in effect in this area and that the conditions had been met for taking further steps to publish it in conformity with substantive legislation.

#### IV

To the end of implementing the following agreements that had been signed:

Agreement on the Bases of the Long-Range Plan of Yugoslavia for Development and Application of Nuclear Energy up to the Year 2000;

Social Compact on Uniform Procedure for Selection of the Single Nuclear Fuel Cycle and Type of Nuclear Power Plant;

Social Compact on Conditions and Procedure for Resolving the Issue of Storage of Irradiated Nuclear Fuel and Permanent Disposal of Radioactive Waste;

the electric power industries of all the republics and autonomous provinces organized themselves on a self-management basis within the framework of the Community of the Yugoslav Electric Power Industry concerning activities to prepare the development, construction, and operation of nuclear power plants. In view of the fact that they are the entities bearing the organizational, professional, and financial obligations which jointly and in collaboration with industry and scientific organizations are to perform the obligations assumed and the jobs and tasks arising out of the social compacts and since as investors in the series of nuclear power plants they have the greatest responsibility, in 1983 they signed a corresponding self-management accord in which they committed themselves to joint cooperation over the entire range of jobs and tasks in the development and application of nuclear power in the country's electric power industry. Coordination, guidance, and performance of the joint program of the electric power industries of the republics and provinces within the framework of JUGEL are handled by the coordinating commission, whose membership consists of two delegates from each electric power industry of a republic or autonomous province.

Back in 1983 the coordinating commission organized the preparation of six basic studies which produced the input data for the documentation used in inviting bids for the nuclear fuel cycle and the series of nuclear power plants, as follows:

- i. definition of the series of nuclear power plants;
- ii. definition of the conditions for location of the nuclear power plants;
- iii. definition of the conditions and characteristics for acceptance of nuclear power plants in the Yugoslav electric power system;
- iv. economic and financial basis for preparing the documentation for the bids;
- v. the nuclear fuel, nuclear fuel cycle, and transfer of technologies;
- vi. conditions of the nuclear power plants in the series with respect to safety.

Fifteen scientific and development institutes and design organizations from all over the country were engaged to prepare these studies. The documentation was prepared for the bids in the closest cooperation with the Business Community of Machinebuilding and Power Machinebuilding JUMEL and the Business Community for Science NUKLIN, within the framework of JUGEL. A single documentation package was prepared in three parts:

- i. the book on bids for the nuclear power cycle;
- ii. the book on bids for the series of nuclear power plants;
- iii. nine books on bids for the Prevlaka Nuclear Power Plant.

The documentation for the bids was prepared by six design organizations in Bosnia-Hercegovina, Macedonia, Croatia, Slovenia, Serbia, and Vojvodina, the six studies and documentation for the bids were prepared by about 60 scientific and professional experts. The entire documentation was professionally evaluated and cleared in all aspects among the electric power industry, the industrial sector, and the scientific community, and it was reviewed and verified by over 300 scientists and specialists.

The documentation for the bids was outlined in such a way as to follow a uniform procedure through which technical, technological, economic, financial, and other data of general interest and of socioeconomic interest would be gathered as the basis for establishing the conditions and proposing a decision to the Federal Executive Council as to selection of the single nuclear fuel cycle and type of nuclear power plant that would be adopted for construction of the series of nuclear power plants.

In relative terms it will be simplest to take positions on the type of nuclear power plant, since all four (PWR, BWR, VVER and HWR) nuclear plants in the world today are proven technical designs which generate competitive kilowatt-hours. However, it will be far more subtle and essential for Yugoslavia to make the decision on the foreign partner from the standpoint of achieving conditions whereby the domestic industry can equip itself to the maximum for manufacturing the equipment and building these installations within the country and outside and also the decisions on the nuclear fuel cycle which would be the basis for our science to be able to begin the process of mastering the essential technologies and gradually making the country independent in this regard, together with domestic industry.

The main thing is to accept the fact that we cannot skip a stitch in mastering the technology of nuclear installations. Without today's nuclear power plants and mastery of them there is no transition to fast-breeder reactors, a higher level of utilization of nuclear energy, and in the rather distant future the tackling of a fusion installation.

## V

The financial, investment, and economic aspects related to the series of nuclear power plants will be realistically learned only after the foreign bids have been gathered, since they will contain the market values. In order to coordinate the planning targets of the investors in the series of nuclear power plants, the coordinating commission adopted a model based on research of Energoprojekt of Belgrade, which was derived from the study that provided the economic and financial bases for preparing the documentation for inviting the bids, as follows:

1. Schedule for construction of a nuclear power plant						
--Preparatory work						4.5 years
--Construction, installation, and testing						7.0 years
2. Funds for construction of a nuclear power plant (for April 1985)						
--Direct investments						in \$ U.S. x 10 <sup>6</sup>
Construction projects:						
Domestic portion	287					15.95%
Imported portion	18					1.00%
Equipment, including installation and customs duties:						
Domestic	483					26.83%
Imported	427					23.72%
Founding investments:						
Domestic portion	170					9.44%
Imported portion	80					4.45%
Working capital:						
Domestic	31					1.72%
Imported	70					3.83%
Interest accruing during the period of construction:						
Domestic portion	109					6.05%
Imported portion	125					6.95%
Total	1,800					
Domestic funds	1,080					60.00%
Foreign exchange	720					40.00%
3. Anticipated pace of the investment project						
Year of construction	1	2	3	4	5	6
Anticipated pace (%)	8	10	17	20	19	15
						11

The model for completing the financial package envisages the following:

1. that the domestic share in construction of the nuclear power plant would be financed exclusively from domestic sources, as follows:
  - a. funds for social reproduction earmarked for capital investment and collected in the electric power industry on the basis of self-management accords for each medium-term period;
  - b. uncommitted depreciation of the electric power industry.

The question of credit from domestic contractors and domestic banks remains open because of the credit terms and conditions for this type of project; that is why it was not included in the financial package.

2. The value of the foreign component, including the interest accruing during the period of construction, would be financed with credit from the foreign supplier. Specific arrangements would be drawn up through a contract between the foreign supplier as creditor, domestic industry, foreign trade, and commercial banks involved in construction of the nuclear power plant, and the electric power industry as the borrower and investor.

Complex organizations of associated labor in industry and the Business Community JUMEL, as well as other domestic industry involved in building nuclear

power plants and the transfer of technology are to provide the foreign exchange, including the interest accruing during the period of construction to repay the credit and corresponding interest, and the contractual obligation for additional augmented exports and purchase of products of domestic industry would be stipulated in the contract with the foreign supplier. The electric power industries as the investors and borrowers would be required to provide the equivalent dinar value for payment of the exports. These arrangements would have to be contracted for in a body, that is, simultaneously with the commercial arrangements for delivery of the various packages of the nuclear power plant, and the form of this would be for the commercial banks to stand behind these arrangements with respect to obligations and the certainty of performance by issuing a guaranty of repayment of the credit by the investors.

## VI

A nuclear reactor in a nuclear power plant is a large source of radioactive radiation. Since 1955 when the first power plant was built with a capacity of 5 MW in the Soviet Union only 36 years have passed, but today there are more than 300 nuclear power plants in operation in the world, and about 200 are under construction. Over that time scientific thought has been developing constantly and has been concerned about increasing the safety of nuclear power plants. The way they are built today, out of every \$10 of investment \$8 goes to guarantee the nuclear power plant's safety. That is why it can be said that nuclear power plants are a clean facility with respect to the environment, since construction of power plant projects is such that plant personnel are irradiated at the level permitted under international and Yugoslav regulations, and outside the power plant's containment, which encloses the reactor installation, radiation amounts to only 1 percent of the 135 millirems which every inhabitant of the earth receives from nature.

The radioactive waste which is created in the nuclear power plant possesses low and moderate radioactivity. For a time, about 3 years, it is temporarily placed in a facility of the power plant. This facility is so designed that personnel are irradiated within permissible doses, while outside the plant radiation is reduced to the 1 percent of natural radioactive radiation referred to above. Accordingly, installations for disposal of radioactive waste from the nuclear power plant are today structures and industrial installations that have been painstakingly designed and set apart at certain points where there would be about 40 workers employed on a shift. Accordingly, for the permanent disposal of radioactive waste it would be necessary to build an installation in conformity with the Law on Protection From Ionizing Radiation at a designated place that would be safe for the environment and would be strictly monitored.

Within the framework of the Community of the Yugoslav Electric Power Industry a professionally evaluated and verified technical and scientific analysis was prepared in 1985 which reconnoitered the terrains of Yugoslavia and ascertained for the basic criteria that our country possesses areas in all republics and provinces where it would be possible to begin explorations for the siting and construction of an installation for disposal of radioactive waste.

Another extremely essential psychological factor is the attitude of the public, which should be dealt with in the form of a social compact concerning the conditions and procedure for settling issues of storage of nuclear fuel and permanent disposal of radioactive waste, whose signatories would be the Federal Executive Council, all the executive councils of the republics and autonomous provinces, the electric power industries of the republics and provinces, JUGEL, and scientific institutions concerned with the various aspects of ionizing radiation.

7045

CSO: 5100/3046

YUGOSLAVIA

BRIEFS

PREVLAKA STATUS--The joint plan on developing OURS (Associated Labor Organizations) within the Association of the Yugoslav Electric Power Economy in the 1986-1990 period (and continuing to 1995) says that pooled funds of electric power organizations will finance the Prevlaka 1,000 megawatt nuclear power plant which is to go into operation in 1994. According to the plan, 500 megawatts would be built by the Croatian electric power economy, 322 megawatts by Slovenia, and the participants for the remaining 168 megawatts would be subsequently determined. It was said in the executive council of the Association of the Yugoslav Electric Power Economy that at this time no decision on constructing the Prevlaka plant exists. Slovenia, namely, has still not settled the question of whether it will participate in its construction. The decision will be issued when the offers have been re-examined and the remaining possibilities for supplying electric power to this republic have been recognized. [Text] [Belgrade PRIVREDNI PREGLED in Serbo-Croatian 3 Jul 86 p 1] /9738

CSO: 5100/3047

INTER-AMERICAN AFFAIRS

BRIEFS

ARGENTINA-BRAZIL NUCLEAR TALKS--Buenos Aires, 16 Jul (NA)--It has been officially reported that high-ranking Argentine and Brazilian officials concluded 3 days of negotiations here on bilateral cooperation concerning the peaceful uses of nuclear energy. These talks were held in view of the visit Brazilian President Jose Sarney will make to Argentina in late July. A Foreign Ministry communique states that the negotiations were held as part of a commitment made by Presidents Raul Alfonsin and Sarney when on 30 November 1985 they signed in Iguazu a joint statement on nuclear policy. In the statement the two nations commit themselves to seek relations to "promote nuclear technological development and the creation of mechanisms ensuring the superior interests of peace, security, and regional development." Argentina was represented in the talks held this week by Foreign International Relations Secretary Jorge Sabato and National Commission for Atomic Energy [CNEA] Chairman Alberto Constantini, among other officials. Brazil was represented by Foreign Ministry Economic Department Chief Sebastiao Rego Barros Netto and Brazilian National Commission for Nuclear Energy [CNEN] President Rene Alves. [Text] [Buenos Aires NOTICIAS ARGENTINAS in Spanish 2005 GMT 16 Jul 86] /8309

CSO: 5100/2091

BRAZIL

BRIEFS

MARCHERS PROTEST ANGRA POWER PLANT REOPENING—Virtually all the residents of Angra dos Reis showed up yesterday afor a march protesting the reopening of the Angra dos Reis Nuclear Power Plant. Intellectuals, scientists, and artists went to Angra dos Reis to assist the movement, which has the support of all the neighboring cities. According to actress Lucelia Santos, who was also there, the government must deal with the problem through a plebiscite, debate the safety issues, reveal its evacuation plan, and indicate how the people should react in case of an accident. The actress wants to know if Brazilian medical facilities are prepared to face the various types of cancer caused by radio activity. [Text] [Rio de Janeiro Radio Globo Network in Portuguese 0300 GMT 12 Jul 86 PY] /9274

CSO: 5100/2089

ECUADOR

BRIEFS

ENERGY MINISTER ON NUCLEAR DEVELOPMENT--The Ecuadorian Government is interested in promoting and developing the current Nuclear Research Center of the Ecuadoran Atomic Energy Commission [CEAA], through the acquisition of a 3-megawatt reactor, Energy and Mines Minister Javier Espinosa said during a ceremony to commemorate the 28th anniversary of this institution. This reactor will reportedly be installed in the Quito area. He added that the construction of an additional reactor of smaller capacity in Guayaquil, which would be used by the universities in research projects, is under consideration. Espinosa praised the work which the CEEA has carried out since its founding, both in planning and in specific projects, including those in agriculture and in the use of radioisotopes in agricultural research and the veterinarian field, and in the health field in hospitals for the control and treatment of cancer with radiotherapy. Espinosa also stressed the advancements made in the analysis of minerals using nuclear methods, and the [word indistinct] of uranium, with the idea of beginning nondestructive tests in the near future that will directly benefit the industrial and metallurgical fields. [Text] [Quito Voz de los Andes in Spanish 1230 GMT 12 Jul 86] /8309

CSO: 5100/2092

MEXICO

BRIEFS

LAGUNA VERDE 1987 START-UP DATE--The first reactor of the Laguna Verde nuclear power plant will begin operating in 1987, the CFE [Federal Electricity Commission] has announced, while assuring that the high level of competence of the Mexican engineering staff and constant supervision programs will maintain its complete safety. It was stated that resources for complying with international safety specifications are not being spared, and this will guarantee the level of safety which this type of plant should provide the population throughout its operating life. Dr Hans Blix, director general of the IAEA [International Atomic Energy Agency], who recently visited Laguna Verde, expressed his approval of the work being done there. Laguna Verde, said the CFE, has a water coolant system that will serve as a moderator and a primary containment building for the reactor area, which would hermetically isolate it in case of a possible accident, thus avoiding any radiation leaks into the atmosphere. [Text] [Mexico City EXCELSIOR in Spanish 13 Jun 86 p 5-A] 7679

CSO: 5100/2086

CHERNOBYL ACCIDENT MAY BEGIN ERA OF COOPERATION

Dhaka THE NEW NATION in English 23 May 86 p 5

[Editorial] According to Dr. Robert Gale, U.S. bone marrow transplant expert treating Chernobyl victims, more than one lakh people run the risk of cancer and other complications for a considerable period stretching into the future and will have to be monitored for the rest of their lives over the effects of the radiation leak. This list of prospective casualty is beyond the immediate casualties of 13 dead and 300 seriously injured.

Closely on the heels of Chernobyl reports of two nuclear accidents, although of a far lesser magnitude, in India and some others of a quite dangerous magnitude occurring previously in Britain and the United States appeared in the media. The Chernobyl accident has shaken the universal psyche more than any other nuclear accident taking place before including the Three-Mile Island accident. Such accidents should naturally set the world community thinking over the prospects and hazards of this limitless source of energy. Many by his skill and ingenuity has been able to unravel many of the mysteries of nature and to establish mastery over some of its forces. While there is no underestimating the utility and importance of these exploits of the Homo Sapiens accidents, like the Chernobyl disaster underscores the necessity of thinking over how best to harness and utilise the forces of nature with the least possible risk.

It is not possible to think in the modern perspective of a totally nuclear-free world. Nor is it desirable either, as a peaceful utilisation of nuclear energy holds out promethean possibilities of a richer and more prosperous existence before man. It is pertinent to mention in this connection that a verse in the Islamic scripture states that man accepted the trust of freedom of will even at a tremendous risk to himself. It is incumbent on man to behave in a way and to utilise his intellect in a manner that can at least reduce the risk factor to the minimum while bringing him immense reward in the form of material progress and advancement.

As there are chances of error where there is man, there is the risk of accident where there are machines. Completely fool-proof formula for the handling of machines may not be possible; nor is it pragmatic to expect a hundred percent fail-safe accident-free machine civilization. But maximum co-operation in the matter of utilisation of man's gifts of the head and the

heart can certainly eliminate the risk factor to a great extent and make the rich, happy and blissful existence - which is the common desideratum of mankind - very much a reality. Let the gestures, overt and covert, of friendly co-operation that have been set in motion by the Chernobyl accident be the beginning of a new era of constructive and energising co-operation in the world of science and technology, in particular and the manifold manifestations of the human mind in general.

/13104  
CSO: 5150/0133

BANGLADESH

CHERNOBYL CRYSTALLIZES ANTINUCLEAR OPINION IN WEST

Dhaka THE BANGLADESH TIMES in English 21 Jun 86 p 5

[Editorial] There are now hopeful signs of a constructive dialogue between the two super powers, the United States and the Soviet Union, on an arms limitation talks in the coming months. These signs were given on Thursday by the White House as President Reagan spoke at the east coast American city of New Jersey about his desire to meet the Soviet leader Mr Mikhail Gorbachev during the current year. He said that senior officials from Washington and Moscow should plan the summit talks which would be the second between the two countries since the new Soviet leader took over in the Kremlin. The White House has also indicated that it feels there is a sincere intent on the part of the Soviet leadership in the Kremlin's current proposals for reducing the threat of a nuclear war and the limitation of strategic offensive nuclear weapons.

The new optimism on the super power talks stems from the recent measures taken by the Soviet Union regarding safety of nuclear reactors after the Chernobyl disaster, the offer of reduction of conventional weapons in Europe and the expressed desire to bring about equality with respect to strategic offensive nuclear arms between the two super powers. These actions and proposals have been appreciated in the White House and President Reagan seems now willing to consider the Soviet call for keeping research on space based defensive weapons system confined to laboratory tests only.

There has been a serious domestic political pressure also on the Reagan Administration to consider opening a dialogue with the Soviets on limiting nuclear weapons. This pressure has come from the US House of Representatives which had taken a resolution by a large majority vote asking President Reagan to abide by the SALT II treaty. Top officials of the Regan Administration, including the Secretary of State George Shultz, had said earlier that the treaty was null and void as far as the United States was concerned. These statements evoked a sharp reaction not only from the Soviet Union but also from western allies of the United States. They called such declarations irresponsible and harmful to world peace. It is apparent that the United States reversed its earlier views on the SALT II treaty and seem willing to abide by the agreement.

A significant new proposal from the Soviet Union concerns the extension of the validity of the anti-ballistic weapons agreement of 1972 for another 15 years. The treaty signed in 1972 is due to expire next year. Mr Reagan said in his New Jersey speech that he would seriously consider the proposal if the Moscow discussed substantial issues at the Geneva arms limitations talks.

The silver lining of hope lies in the surge of public opinion against the proliferation of nuclear weapons and their deployment. The peace movement in western capitals has been already vigorous. But the Chernobyl nuclear disaster in the Soviet Ukraine in which an unspecified number of people were killed and injured has been able to crystallise opinion of many others who were earlier doubtful about the goals of the peace movement.

Regular demonstrations in the western capitals are urging upon governments to reconsider the setting up of new nuclear power stations. The use of nuclear energy is coming under a severe scrutiny. In many of the western countries governments have been forced to either abandon their nuclear energy programmes or drastically cut down expansion plans.

/13104  
CSO: 5150/0135

BANGLADESH

ERSHAD GREETS IPPNW MEETING IN COLOGNE

Dhaka THE BANGLADESH OBSERVER in English 31 May 86 p 1

[Text]

President Hussain Mohammad Ershad has reiterated Bangladesh's support for all international initiatives directed towards the elimination and destruction of all weapons nuclear and conventional and their stockpiles reports BSS.

In a message to the International Physicians for Prevention of Nuclear War (IPPNW) on the occasion of its sixth congress being held in Cologne President Ershad recalled that very since the United Nations declaration on disarmament was adopted in 1978 Bangladesh "has been in the vanguard of global efforts in this regard".

"The achievement of general and complete disarmament is therefore, our ultimate objective so that we can redirect the limited resources at our disposal for providing succour and relief to the hungry and impoverished of the world" the presidential message said.

He said the IPPNW congress assumed special significance as it coincided with the observance of the International Year of Peace.

The President in his message also appreciated the special role being played by the IPPNW in creating public opinion about the danger of nuclear war that mankind faces today.

He also observed that the conferment of Nobel Peace Prize to IPPNW for the year 1983 was a fitting tribute to the great humanitarian role that it was playing in the promotion of peace security cooperation and understanding.

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BANGLADESH

BRIEFS

U.S. TESTS SCORED--Ten prominent intellectuals and members of the Presidium of Bangladesh Peace Council in a joint statement on Sunday expressed their concern over nuclear test explosion by the United States in Nevada. They demanded immediate termination of all nuclear tests. The signatories to the statement are Mr. Abu Zafar Shamsuddin, Begum Sufia Kamal, Justice K. M. Sobhan, Justice Debesh Bhattacharya, Mr. Qamrul Hasan, Mr. Kalim Sharafi, Mr. A. F. M. Shafiullah, Professor Kabir Choudhury and Mr. Ali Aksad. [Text] [Dhaka THE BANGLADESH OBSERVER in English 28 May 86 p 3] /13104

CSO: 5150/0136

## NEW PROBLEM SEEN AT KALPAKKAM NUCLEAR POWER PLANT

Madras THE HINDU in English 28 Jun 86 p 1

[Text]

MADRAS, June 27.

Even as the plant personnel continued to mop up the heavy water that leaked two days ago from Unit-1 of the Madras Atomic Power Station at Kalpakkam, a fault in the turbine of Unit 2 caused it to trip this morning. The two incidents, however, were unrelated.

Mr. K. S. N. Murthy, Director, MAPS, said a diaphragm in Unit-2's turbine ruptured around 7:30 a.m. today and though it was rectified within an hour, the reactor "poisoned out" and the plant authorities will have to wait for 36 hours before they can start the reactor again.

Unit 2 was maintaining a near peak level output when the incident occurred.

**Retrieved:** As for Unit-1, Mr. Murthy said the plant personnel wearing plastic suits were today sponging up the remains of the heavy water that lay in pools within the reactor building. About 90 per cent of the seven tonnes of heavy water that had escaped from the coolant channels had been retrieved, he said.

The cause for the leak was still under investigation, Mr. Murthy said, adding that the Department of Atomic Energy's Safety Review Committee which is independent of the operating staff, would be examining it thoroughly next week before giving the go ahead for the reactor to be recommissioned.

**Complicated exercise:** Unit-1 was shut down three months ago with a defective generator transformer. In a complicated logistical exercise, a substitute transformer weighing 180 tonnes was moved by rail and by road from the Narora Atomic Power Station in Uttar Pradesh and installed at Kalpakkam. Tests on the transformer were carried out earlier this month and had it passed them, the Unit might have been commissioned last week. But the authorities found the quality of the transformer oil to be unsatisfactory and after unsuccessful attempts to upgrade the quality, they have now decided to replace it with new stock. The authorities expect to recommission the Unit in the first week of July.

**Smoke bombs found near Tarapur**

PTI reports from Bombay:

Eight smoke cartridges normally used by ships to fire distress signals were found on the seashore near the Tarapur Atomic Power Station this week, it was officially stated today.

The Director-General of Police, Mr. S. S. Jog, said a police party found two such cartridges on Tuesday, three others last night and four more today. One used cartridge and seven unused ones have been handed over to the Navy for examination.

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CSO: 5150/0137

## TATA OFFICIAL ON UNCERTAINTY OF NUCLEAR POWER

Bombay THE TIMES OF INDIA in English 30 Jun 86 p 7

[Text]

**BOMBAY, June 29 (UND.)**

**T**HIE desirability of nuclear power is again in question, writes Prof B. Banerjee a theoretical nuclear physicist of the Tata Institute of Fundamental Research in the forthcoming issue of "Science Age."

In his article titled, "Chernobyl and After," Prof. Banerjee puts forth disturbing issues regarding nuclear power, which has been a "menacing prospect" from its very inception.

The common man is uneasy about it and, in almost all industrially-advanced countries, vocal minorities oppose it. This fear and mistrust has again been raised by the worst nuclear power plant accident in history in Chernobyl, a small Russian town in the Ukraine, 130 km. north of Kiev, he says.

**GREATEST DANGER**

Prof. Banerjee says that in a reactor accident, the greatest danger for humans is the release of radioactive elements from the core into the surroundings and the atmosphere.

Chernobyl is not the first nuclear accident. There have been two major accidents at Windscale, England (1957) and Three-Mile Island, U.S.A., (1979).

At Windscale, radioactive material

was carried by air and deposited over England, Wales and northern Europe. The major radioactive nucleus found on the ground was Iodine-131, which is easily absorbed in the human body and cells are damaged by the electrons emitted by it.

In the Three-Mile disaster, the release of Iodine-131 was small. In Chernobyl, according to the International Atomic Energy Agency, about half the radioactive material released was Iodine-131.

Prof. Banerjee writes that the level of radiation was, however, surprisingly low (10-15 millirems per hour within a 30-km. zone).

One plausible explanation, the theoretician offers, is that the radioactive plume coming out of the reactor was so hot that it rose very high in the air, sparing the immediate neighbouring areas from a heavy dose of radiation.

An American expert, who was invited by the Soviet government to treat the radiation victims, has described the typical symptoms of radiation exposure as depression of blood-cell formation, liver toxicity and gastro-intestinal disorders.

Prof. Banerjee says "more important than the causes of this terrifying accident are the lessons we can draw from it."

First, the devotees of nuclear power should grasp a simple truth that it is an extremely risky enterprise. There are always ghastly failures. *Rhino* and *Challenger* are tragic reminders of that.

**HEAVY WATER**

Unfortunately, nuclear power is different. A reactor accident endangers the health of generations to follow. The impact is so huge that it is not possible to demand from the people that they bear the cost of learning from mistakes, he argues.

Prof. Banerjee writes that the reactors in India are perhaps safer than the Chernobyl ones, because they have heavy water as the moderator and, as the chairman of the nuclear power board recently assured, they have secondary containment systems.

Even then, he says, it would be absurd to claim what happened in Chernobyl cannot happen here. The physicist asks: "Do we have contingency plans for worst-case scenarios?"

He concludes that nuclear power cannot be abandoned totally, at least till an alternative is found. Meanwhile, nuclear power authorities would be well advised to scrutinize design plans allowing for greater safety margins.

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CSO: 5150/0138

BRIEFS

RAJASTHAN PLANT--The 220 MW first unit of the Rajasthan Atomic Power Project (RAPP) at Rawat Bhata near Kota, which was closed down some time ago due to a leak in the "end steel" and some trouble in the turbine blades, is likely to be recommissioned in early July. This unit, according to a spokesman, was a prototype of the reactor built with Canadian assistance. A similar reactor in Canada faced such difficulties and was "barely functional", he added.  
[Text] [Madras THE HINDU in English 19 Jun 86 p 9] /13104

CHERNOBYL FALLOUT--Traces of radioactive fall-out from the Chernobyl accident, the world's worst nuclear mishap, have been detected in Air-India flights coming from the Soviet Union, reports PTI. The traces were detected by scientists of the Bhabha Atomic Research Centre here. They are monitoring radioactive emissions into the atmosphere from the damaged nuclear plant. According to BARC and Air-India officials, at least a few Air-India flights from Moscow had shown evidence of radioactive material. The analysis of dust samples clearly indicated that the level of radioactivity was within the permissible limit and in no way harmful to passengers and crews, the BARC scientists asserted. The spokesman said Air-India was considering a proposal to reroute its flights to the Soviet Union not because of the nuclear mishap, but because of commercial consideration. [Text] [Calcutta THE STATESMAN in English 18 Jun 86 p 16] /13104

CHERNOBYL FEARS ALLAYED--Bombay, June 6--Levels of radioactivity specifically identifying the fall-out from the Chernobyl power station have been monitored at Tarapur, Rawat Bhata, Kalpakkam and Trombay, a department of atomic energy (DAE) press note said today. At Trombay, increasing levels of radiation were detected from May 14 till May 21, after which they decayed. "But the levels are insignificant from the health point of view if these values are compared with those due to natural radioactivity in air which is 100 to 1,000 times more," the department said. The measurements were being continued to monitor levels of radioactive iodine, which is an internationally accepted parameter for fall-out measurement. The additional radiation dose that will be received in India due to the fall-out from Chernobyl will be no more than a thousandth part of 0.2 rems, which a typical man receives in a year from all natural sources. [Text] [Bombay THE TIMES OF INDIA in English 7 Jun 86 p 5] /8309

HEAVY WATER LEAK--Nearly 7 tons of heavy water escaped from the atomic power plant in Madras yesterday. A pressnote of the Nuclear Power Board issued in Bombay today says there was, however, no resultant radioactivity in the environment. It says heavy water escaped into a vault inside the reactor when the duplicate transformer was being installed at the plant. The main transformer was shut down in March this year following technical failure. All safety systems in the plant functioned smoothly during the escape of the water, the pressnote says. [Excerpts] [Delhi Domestic Service in English 1530 GMT 26 Jun 86] /8309

CSO: 5150/131

SWEDISH NUCLEAR TECHNOLOGY EXPORTS REPORTED

Tel Aviv HA'ARETZ in Hebrew 7 May 86 p 1

[Article by Elivahu Zahavi: "Swedish Press Reveals: A Swedish Company Has Sold Equipment for Testing Nuclear Weapons to Pakistan and Israel"]

[Text] Today the Swedish press published that a Swedish company named Scandiflash sold Pakistan, Israel, and South Africa extremely important technological equipment for countries which produce nuclear arms but which avoid open testing of these arms to avoid political criticism.

The equipment under discussion was developed by the Swedish Institute for Military Research in the early 1950's when Sweden was doing testing for nuclear arms production. When the Swedish government decided in the early 1960's to halt the testing, the patent for the equipment was acquired by a sister company of Saab.

The unique thing about the instrument called the "roentgen absorber" is its capacity to carry out a nuclear explosion under laboratory conditions. This kind of testing saves unnecessary open testing which is likely to be revealed and lead to political pressures on a country engaged in the secret production of nuclear arms. The Swedish company sold almost 100 instruments to 15 countries before the Swedish government decided in 1984 to ban the production and sale of the instrument.

The Swedish company sold three countries, Pakistan, Israel and South Africa, an unknown number of "roentgen absorbers" via a company in Italy.

Nuclear scientists in New Delhi were the first to reveal that Pakistan had been helped by the Swedish technological equipment in its production of nuclear arms.

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CSO: 5100/4513

KUWAIT

NATION DECIDES AGAINST FUTURE USE OF NUCLEAR POWER

London MEED in English 28 Jun 86 p 19

[Article by Jonathan Crusoe]

[Excerpt]

OLD age is threatening the future of Kuwait's first power station; the plant, at Shuaikh, may close later in 1986. One of its three remaining units has already been shut down, after more than 30 years' service. The Shuaiba North station may follow, when the country's latest 2,400-MW plant, Al-Zour South, starts up; a similar unit, Doha West, is already operating.

Kuwait is unlikely to turn to nuclear power. Electricity & Water Minister Mohammad al-Sayyed Abdel-Mohsin al-Rifai told the daily Al-Qabas, pointing out that a third 2,400-MW conventional station is planned.

The country is too small to house a nuclear power station and certainly too small to absorb the effect of any accident. Nor does Kuwait wish to depend on foreign countries for the supply of technology and fuel, which is not sold on the open market, Al-Rifai noted. The disposal of spent fuel would also pose a problem.

Kuwait has been studying the possible use of nuclear power for many years, Al-Rifai says. An application to join the Vienna-based International Atomic Energy Agency was accepted in 1963. A committee set up in February 1975 asked the UK's Harwell atomic research institute to carry out a study on a possible nuclear industry; options were proposed.

These ranged from ordering and building a nuclear power station, to building a training reactor, which would also generate about 20-30 MW and desalinate 1 million-2 million gallons of water a day. This was deemed the best choice, offering training benefits in particular.

Now that the nuclear option has been rejected, Kuwait should concentrate on making use of its 30-odd years' experience in operating conventional power stations, Al-Rifai told Al-Qabas.

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CSO: 5100/4520

NETHERLAND COURT VERDICT CONVEYED TO A. Q. KHAN

Karachi DAWN in English 26 Jun 86 p 4

[Text] Lahore, 25 Jun--The Chief Public Prosecutor of the High Court in Amsterdam, Mr R. B. M. Beger, has conveyed officially the judgement of the court in which it was decided not to take the matter against Dr Abdul Qadeer Khan, a known scientist in nuclear technology, to the higher court which had "declared the earlier conviction as a nullity".

The communication has been received here by Mr S. M. Zafar, counsel for the scientist, with the express purpose of conveying the decision to Dr A. Q. Khan, whose present address is not available to the court in Amsterdam.

According to Mr S. M. Zafar with the issuance of the official communication from the Chief Public Prosecutor it can authentically be stated that the conviction against Dr A. Q. Khan has come to an end and the case against him dropped. Dr Khan was convicted by a lower court in Amsterdam on November 14, 1983 and sentenced to four years' RI.

Original summons were sent to Dr A. Q. Khan on October 18, 1983 through the Foreign Ministry. The Government of Pakistan refused to serve the summons on the ground that there was no treaty between Pakistan and the Netherlands on mutual assistance in judicial matters. Despite this, Dr A. Q. Khan was convicted in absentia notwithstanding that summons were not legally served and that Dr A. Q. Khan had merely asked for information and not committed any offence.

The Appellate Court in Amsterdam, on March 28 last year declared the lower court's verdict null and void but pronounced the "initiatory summons void". On the case coming back to the Public Prosecutor, he took the above position which has now been officially conveyed.

"Accordingly, Dr A. Q. Khan stands acquitted of the false charges which were levelled against him by the lobby that was interested in stopping Pakistan from acquiring nuclear technology," Mr Zafar said.

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CSO: 5100/4751

PAKISTAN

BRIEFS

U.S. AID ALLEGED--New Delhi July 8 TASS--Secret aid rendered by the USA to Pakistan in developing nuclear weapons is assuming a new dangerous direction, write the Indian weekly BLITZ. The Washington administration helps the Pakistani committee on nuclear energy to get U.S. electronic equipment necessary for testing a nuclear device. The USA also agreed to assist Pakistani specialists working on nuclear-capable medium-range missiles. Apart from getting consultations in the USA, notes BLITZ, they will also use NASA's technical facilities. [Text] [Moscow TASS in English 0835 GMT 8 Jul 86 LD] /6662

CSO: 5100/4750

SWEDISH AGENCY APPROVES EXCHANGE OF NUCLEAR WASTE WITH FRG

Stockholm SVENSKA DAGBLADET in Swedish 20 Jun 86 p 17

[Article by Maria Holm]

[Text] The barter deal in which 24 tons of plutonium-rich waste from West German reactors will be exchanged for the 57 tons of waste that Sweden has stored at La Hague in France was approved on Thursday by the governing board of the Swedish Nuclear Power Inspection Board.

The Swedish Nuclear Fuel Handling Company (SKB) planned the deal a year ago. The only thing still needed is the government's authorization, but it is expected to respond favorably to the deal. Only Karl-Erik Olsson of the Center Party protested the decision by the Nuclear Power Inspection Board.

The waste that will come from the FRG originated in so-called MOX fuel, which is produced by mixing plutonium with ordinary unenriched uranium. The waste therefore contains twice as much plutonium as ordinary nuclear waste, and its neutron radiation is much higher.

Series of Tests

The 24 tons that are now going to be shipped to the intermediate storage site at Oskarshamn are currently being stored in the reactor pools at four West German nuclear powerplants. The waste is the result of an early series of tests with MOX fuel and differs from modern MOX waste in that it is almost impossible to reprocess.

And since the FRG has plans, at least so far, for a final storage method that will begin with reprocessing, those 24 tons are very unsuitable for its program.

As is known, Sweden has the opposite problem. Its current final storage plan, known as KBS-3, requires that waste be handled directly, without reprocessing.

But 57 tons of Swedish waste have been waiting in large pools outside the reprocessing plant in La Hague since the spring of 1983--they are the relic of previous plans for final storage.

### Paying Something "To Boot"

If the countries exchange their waste, both will be getting rid of big problems, says the KBS [Nuclear Fuel Safety Project]. The agreement also provides that the FRG will pay Sweden about 100 million kronor as a kind of "boot" to compensate for the difference in value.

The People's Campaign Against Nuclear Power is very critical of the proposed barter deal.

"Every step away from the principle that each country is to take care of its own waste is dangerous," says Christina Ringsberg of the People's Campaign Against Nuclear Power.

### Waste Merry-Go-Round

"This may be the start of a waste merry-go-round which will be difficult to monitor and in which quantities may disappear and be used to produce bombs.

"Moreover, it is horrible for Sweden to offer to take responsibility for waste that is proportionately more dangerous. That makes it harder to say no the next time. Is Sweden going to be transformed into a nuclear disposal plant?" wonders Christina Ringsberg, who says that Sweden should simply bring back its 57 tons from La Hague regardless of any previous contracts.

Hans Forsstrom of the SKB says: "The West German waste will be stored in a different kind of capsule. External radiation will be the same as that from capsules containing ordinary waste."

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CSO: 5100/2531

EUROPEAN AFFAIRS

BRIEFS

SWEDEN SELLS SWITZERLAND URANIUM--ASEA-Atom has received authorization from the Nuclear Power Inspection Board to export 690 kilograms of uranium to Switzerland and 150 kilograms of uranium to the United States. The uranium is in the form of fuel rods. ASEA-Atom supplies just over 300 tons of uranium per year, about half of which goes to foreign nuclear powerplants. The raw material is enriched fuel in the form of uranium hexafluoride, and it is imported from the FRG or the United States. It is processed into fuel rods at the plant, and the rods are then put together to form fuel assemblies. Of ASEA-Atom's total of 1,200 employees, 300 are employed in the production of fuel, an activity that provides the firm with an income of from 600 million to 700 million kronor every year. [Text] [Stockholm SVENSKA DAGBLADET in Swedish 24 Jun 86 p 25] 11798

CSO: 5100/2531

NETHERLANDS

BRIEFS

SECOND ENRICHMENT PLANT--Almelo, 16 Jun--Ultra-Centrifuge Nederland (UCN) said at the weekend it had won government approval to build a second commercial uranium enrichment plant at Almelo and that work on it would begin next year. The capacity of the plant will grow eventually to 2,000 tonnes of separative work per year, UCN said. At present the capacity of UCN's first commercial uranium enrichment plant is being expanded from 1,000 to 1,500 tonnes of separative work (SW) per year. UCN's uranium enrichment capacity in Almelo is scheduled to reach 3,500 tonnes by the end of the 1990s. The state-owned UCN is the Dutch partner in the three-nation uranium enrichment consortium Urenco. The other partners are British Nuclear Fuels and Uranit GmbH of West Germany. The consortium currently has orders worth some 10 billion guilders to enrich uranium for use as fuel in nuclear reactors. All orders are shared evenly among the three partners. The first three plants operated by UCN were experimental and demonstration plants with a limited capacity. [Text] [The Hague ANP NEWS BULLETIN in English 16 Jun 86 p 5] /9274

REPORT ON NUCLEAR RISK--Utrecht, 2 Jul--The consequences of a medium to large nuclear reactor accident in the Netherlands have been vastly underestimated by Dutch authorities, Dutch scientists conclude in a study into the effects of the Chernobyl nuclear reactor disaster, published today. The study conducted by the Association of Scientific Researchers criticised recent estimates as concentrating too heavily on the chance of an accident and the likely number of immediate deaths while paying relatively little attention to the effects of long-term radio-active emissions. The Dutch study pleaded for fresh research into the potential risks of nuclear energy, to be conducted by independent researchers uninvolved in the supply of nuclear energy or in planning decisions for the location of new nuclear power plants. The association, which in 1974 pleaded for research into other effects of nuclear accidents than the number of acute (immediate) deaths, said that the consequences of the Chernobyl accident were in 'shrill contrast' to Dutch government statements on nuclear reactor safety. The Chernobyl accident had shown that the consequences of a medium-size nuclear accident were far more serious than hitherto accepted by Dutch authorities. A similar accident in the Netherlands, contaminating a large area, would have dealt an immense blow to Dutch agriculture, the report said. The scientists concluded that the government should institute more exhaustive studies into the long-term effects of nuclear energy on public health, environment and society before taking further decisions on nuclear energy. [Text] [The Hague ANP NEWS BULLETIN in English 3 Jul 86 p 4] /9274

NUCLEAR WASTE STORAGE--The Hague, 18 Jun--The organisation charged with managing the Netherlands' nuclear waste (COVRA) announced today that it will build interim waste storage facilities at Borssele in the southern province of Zeeland. The facilities will be built on a 24-hectare site less than one kilometre from Borssele's 450-megawatt nuclear power plant and should be in use by 1991, COVRA said. The site will be used to store the Netherlands' low, medium and high level nuclear waste for several decades until a method is agreed for permanent disposal of the waste. A government-appointed committee has already recommended that the safest way to dispose of the waste permanently is in geologically stable salt-domes, deep underground. The Netherlands currently stores low and medium level nuclear waste at Zijpe in the south of the country. It has no facilities at present for high level nuclear waste which is sent to France and Britain for processing and storage but which is due to return to the Netherlands in the 1990s. The Netherlands has only two nuclear plants, one at Borssele and a 50-megawatt plant at Dodewaard near the city of Nijmegen. Government plans to build more nuclear plants were stalled by the Soviet nuclear plant accident at Cernobyl in April. [Text] [The Hague ANP NEWS BULLETIN in English 18 Jun 86 p 9] /9274

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